

TASK 3 SOLVE EQUATION WITH MULTIPLE LOGS ON ONE SIDE:**TECHNIQUE: CONDENSE TO ONE LOG STATEMENT.**

$$\text{Log}_2 X + \text{Log}_2 5 = 2$$

$$\text{Log}_2(5X) = 2$$

$$2^2 = 5X$$

$$4 = 5X$$

$$\frac{4}{5} = \frac{5X}{5}$$

$$X = .8$$

$$X = \frac{4}{5}$$

TASK 4 SOLVE EQUATION WITH ONE LOG ON EACH SIDE**TECHNIQUE: REMOVE THE LOG FROM EACH SIDE.**

$$\text{Log}(R+2) = \text{Log}(3R-1)$$

$$\begin{array}{r} R+2 = 3R-1 \\ -R \quad \quad -R \end{array}$$

$$\begin{array}{r} 2 = 2R-1 \\ +1 \quad \quad +1 \end{array}$$

$$3 = 2R$$

$$\frac{3}{2} = \frac{2R}{2}$$

$$1.5 = R$$

TASK 5 SOLVE EQUATION WITH MULTIPLE LOGS ON ONE OR BOTH SIDES:**TECHNIQUE: CONDENSE EACH SIDE TO GET ONE LOG ON EACH SIDE.**

$$\text{Log}(3X+2) + \text{Log} 9 = \text{Log}(X+5)$$

$$\text{Log } 9(3X+2) = \text{Log}(X+5)$$

$$9(3X+2) = X+5$$

$$27X + 18 = X + 5$$

$$\begin{array}{r} 26X + 18 = 5 \\ -18 \quad \quad -18 \end{array}$$

$$26X = -13$$

$$\frac{26X}{26} = \frac{-13}{26}$$

$$X = -\frac{1}{2}$$

4.5 Homework

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$$\frac{3^x - 3^{-x}}{3^x + 3^{-x}} = \frac{1}{4}$$

MULT BOTH SIDES
BY THE COMMON DENOM

$$\frac{4(3^x + 3^{-x})}{1} \cdot \frac{3^x - 3^{-x}}{3^x + 3^{-x}} = \frac{1}{4} \cdot \frac{4(3^x + 3^{-x})}{1}$$

$$4(3^x) - 4(3^{-x}) = 3^x + 3^{-x}$$

$$-3^x - 3^{-x} \quad -3^x - 3^{-x} \quad \leftarrow$$

MOVE EVERYTHING
TO ONE SIDE

$$3(3^x) - 5(3^{-x}) = 0$$

NOW TO GET RID OF
THE 3^{-x} MULT EVERYTHING
BY 3^x (ADD EXPONENTS)

$$3^x(3(3^x) - 5(3^{-x})) = 0$$

$$3(3^{2x}) - 5(3^0) = 0$$

$$3^0 = 1$$

$$3(3^{2x}) - 5 = 0$$

ADD 5 TO BOTH SIDES

$$3(3^{2x}) = 5$$

$$3^{2x} = \frac{5}{3}$$

DIVIDE BOTH SIDES BY 3

$$\ln 3^{2x} = \ln\left(\frac{5}{3}\right)$$

TAKE LN OF BOTH SIDES

$$2 \times \ln 3 = \ln\left(\frac{5}{3}\right)$$

MOVE EXPONENT

$$x = \frac{\ln \frac{5}{3}}{2 \ln 3}$$

GET X ALONE

$$x \approx .232$$

TADAA !!

4.5 HWK

(57) $\log_3(2x-7) - \log_3(4x-1) = 2$

$$\log_3 \frac{2x-7}{4x-1} = 2$$

CONDENSE LEFT SIDE TO ONE LOG STATEMENT

$$3^2 = \frac{2x-7}{4x-1}$$

WRITE IN EXPONENT FORM

$$9 = \frac{2x-7}{4x-1}$$

$$3^2 = 9$$

MULT BOTH SIDE BY LCD

$$\frac{(4x-1)}{1} \cdot 9 = \frac{2x-7}{\cancel{4x-1}} \cdot \frac{\cancel{(4x-1)}}{1}$$

$$36x - 9 = 2x - 7$$

GET Xs ON ONE SIDE

$$34x = 2$$

DIVIDE BY 34

$$x = \frac{2}{34}$$

$$x = \frac{1}{17}$$